

*UPOGEBIA SPINISTIPULA*, A NEW BURROWING  
SHRIMP FROM THE FLORIDA SHELF,  
NORTHEASTERN GULF OF MEXICO  
(DECAPODA: THALASSINIDEA: UPOGEBIIDAE)

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*Abstract.*—*Upogebia spinistipula*, a new species of burrowing thalassinidean shrimp was taken in box core samples of live bottom material from a sector of the continental shelf in the northeastern Gulf of Mexico that lies off Panama City to Cape Romano, Florida. The rostrum of the small species (carapace length ca. 10 mm) resembles that of *U. lepta* from the tropical eastern Pacific, the tail fan resembles that of most species of *Upogebia* in the western hemisphere having an essentially rectangular telson, and the ventrally spined antennular and antennal peduncles resemble those of west Pacific species in the recently described genus *Gebiacantha*. The species apparently has no close relatives in the western Atlantic.

An undescribed species of *Upogebia* Leach, [1814] was discovered in box core samples taken on the continental shelf (carbonate platform, see Rezak et al. 1990) of the northeastern Gulf of Mexico. The collections were part of a Minerals Management Service (then Bureau of Land Management) sponsored baseline study referred to as the Mississippi-Alabama-Florida (MAFLA) Outer Continental Shelf Study (OCS) (see Phillips et al. 1990). Material used in the present investigation came from 11 of the 87 MAFLA stations distributed in 9 transects that were sampled for benthic infauna during 1975–1978. Stations where the new species was taken were scattered from southeast of Panama City, Florida, to west of Cape Romano in water depths ranging from 10 to 177 m (Fig. 1). All of the specimens are damaged, and many are fragmentary with legs usually detached or missing. The holotype and a series of paratypes have been deposited in the National Museum of Natural History (USNM). Paratypes to be transferred to the Museum of the Gulf Coast Research Laboratory (GCRL) are indicated.

*Upogebia spinistipula*, new species  
Figs. 2–3

*Material examined.*—Sta. 2211, 27°56'29.5"N, 83°52'59.5"W, 43 m, coarse sand: USNM 239251, Holotype ♂, Nov 1977.—239252, Allotype ♀, Jul 1976.—Paratypes: 239260, 11 ♂, 7 ♀ (2 ovig.), 1 juv., Jul 1975 (4 ♂ and 2 ♀ ovig. to be transferred to GCRL).—239261, 2 ♂, 2 ♀ ovig., 2 other frags., Jul 1976.—239262, 1 ♀ ovig., Feb 1978.—239265, detached legs, 9 Aug 1977. Sta. 2528, 29°54'58.6"N, 86°04'58.5"W, 37 m, coarse sand: 239253, 3 ♀ ovig. & 1 probable ♂, Feb 1977.—1 ♂ cephalothorax, Sep 1977.—2 ♀ (1 ovig.), Feb 1978. Sta. 2531, 29°47'58.9"N, 86°09'28.9"W, 45 m, coarse sand: 239254, 3 ♀ (1 frag.), 7 Feb 1976.—1 juv., Nov 1977. Sta. 2532, 29°46'N, 86°12.5'W, 52 m, coarse sand: 239255, 1 tiny cephalothorax, Jul 1976. Sta. 2533, 29°42'59.9"N, 85°15'28.6"W, 67 m, coarse sand: 239256, 1 ♀ ovig., 26 Sep 1975.—1 tiny juv., 8 Feb 1976. Sta. 2534, 29°40'N, 86°17'W, 73 m, coarse sand: 239257, 1 ♂, Jul 1976. Sta. 2419, 29°46'59.8"N, 84°05'00.2"W, 10 m, medium fine sand:

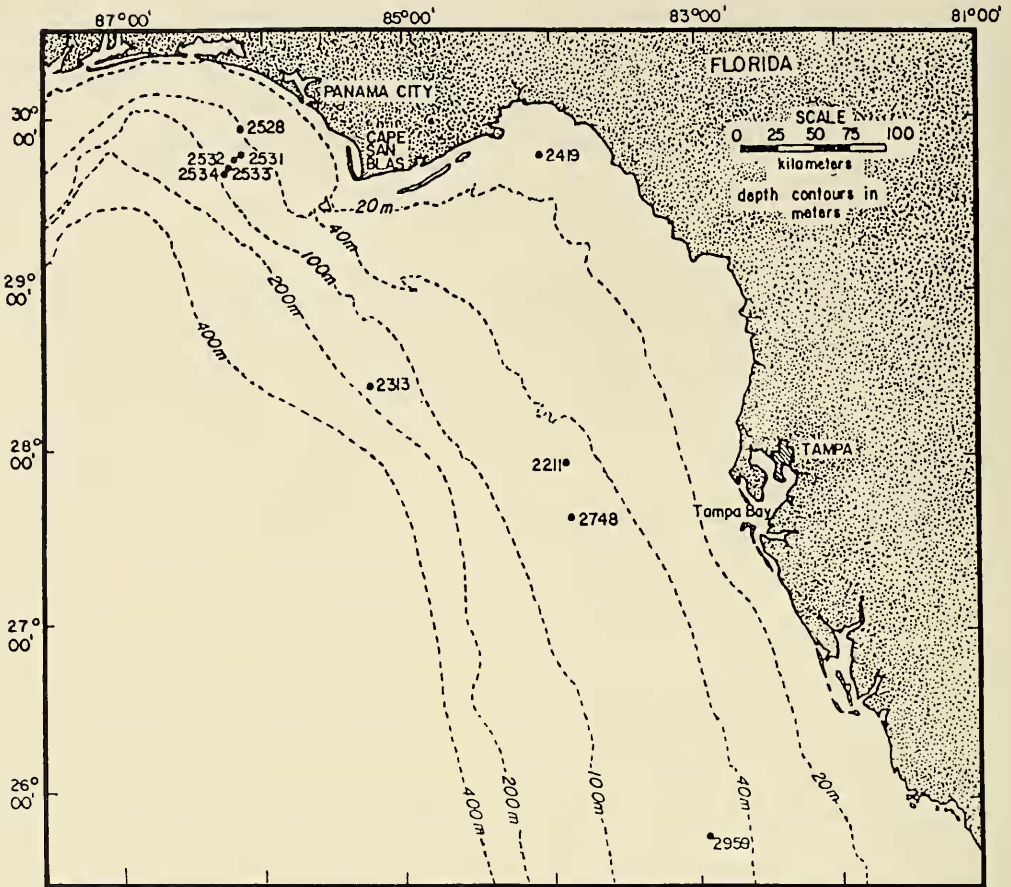


Fig. 1. BLM 77/88 MAFLA Survey station locations in northeastern Gulf of Mexico at which *Upogebia spinistipula*, new species, was collected. Station data are given in Materials Studied.

239258, 1 juv., Sep 1977. Sta. 2313, 28°23'59.3"N, 85°15'03.0"W, 177 m, clayey, sandy silt; 239259, 1 ♂, 20 Jan 1976. Sta. 2748, 27°37.2'N, 83°53.5'W, 50 m, coarse sand; 239263, 4 juvs. (2 frags.), Jul 1976. — 1 ♂, 2 ♀, Nov 1977. — 1 juv. frags., Feb 1978. Sta. 2959, 25°40'N, 83°05'W, 60 m, silty, very fine sand; 239264, 1 postlarva, 9 Aug 1977.

*Diagnosis.* — Rostrum bearing subapical pair of strong spines followed on each side by 5–7 strong spines. Projections to either side of elongate rostrum ending in acute spine. Postocular spine present. First and second abdominal segment lacking ventral spines; sixth segment lacking hooked an-

terolateral spine. Telson subrectangular. Antennular and antennal peduncles each bearing irregular row of ventral spines. Merus of cheliped lacking subdistal dorsal spine, carpus with 2–3 subequal spines on mesiodistal margin. Merus of leg 2 with proximal mesioventral spine, merus of leg 4 spineless.

*Description.* — Rostrum subtriangular, straight, narrow, tip exceeding eyestalks by distance at least  $\frac{3}{4}$  their length; dorsal pair of strong, subapical spines followed on each lateral margin by 5–7 strong dorsal spines, ventral midline bearing 2–3 spines; dorsal surface bearing spiniform tubercles arranged more or less parallel to either lateral

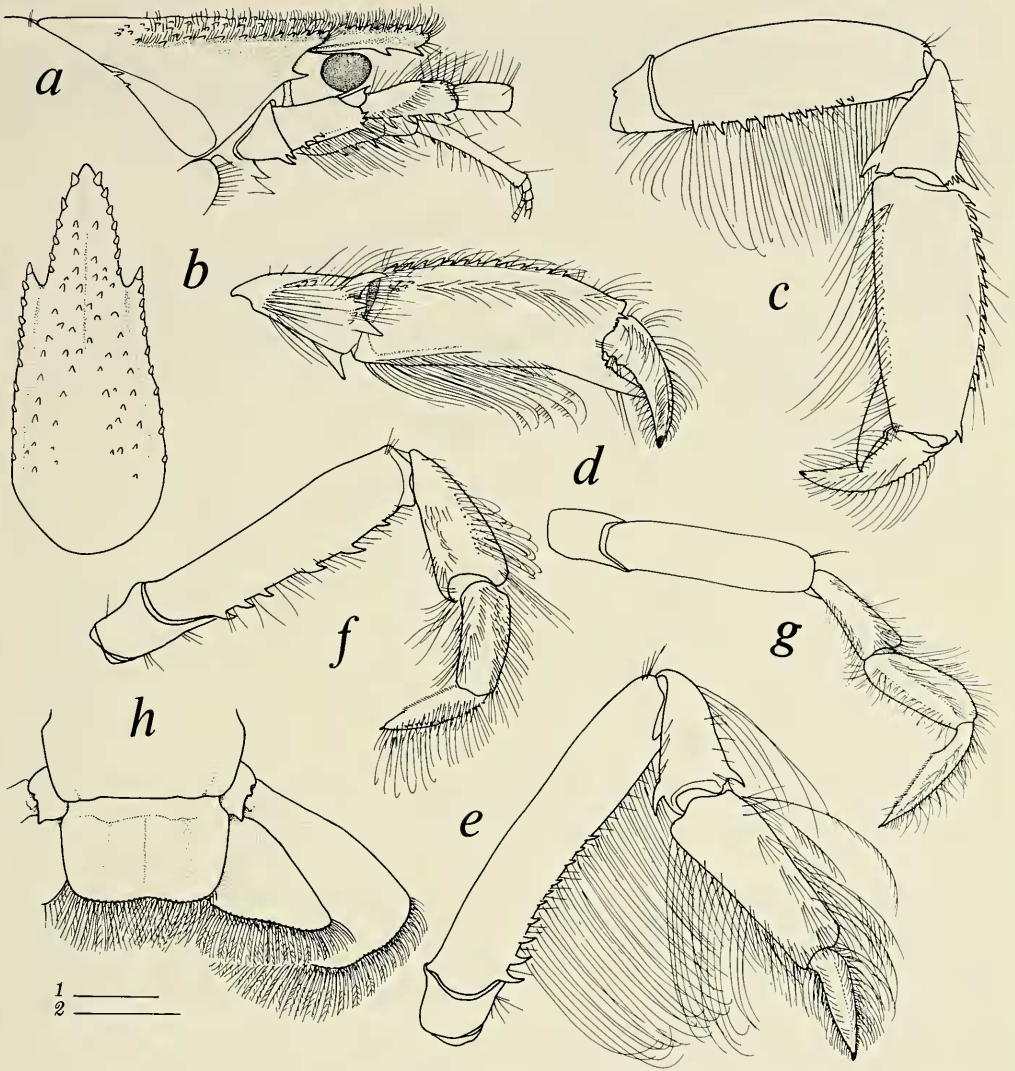


Fig. 2. *Upogebia spinistipula*, new species, ♂ Holotype: a, Cephalic region, lateral; b, Anterior carapace, dorsal; c, Right cheliped, lateral; d, Left chela and carpus, mesial; e, Leg 2; f, Leg 3; g, Leg 4; h, Telson and uropods. Scales = 1 mm: 1, a, c, h; 2, b, d-g.

margin and confluent with field of similar spines on anterior  $\frac{2}{3}$  of cephalic region, field angling toward sides posteriorly and diminishing to obsolence; gastric surface posterior to this smooth; field of spines flanked on each side by posteriorly divergent furrow and that in turn by straight lateral ridge slightly diverging from median line posteriorly, each ridge bearing crest of about 8-10 spines, strongest on lateral rostral pro-

cess and decreasing to obsolence posteriorly. Shoulder flanking cervical groove bearing 1 or 2 spines below intersection with thalassinidean line; latter continued to posterior margin of carapace with slight interruption. Postocular spine present.

Abdominal sterna unarmed, terga glabrous, very few setae on margin of pleura 3-5.

Telson subrectangular, obsolescent trans-

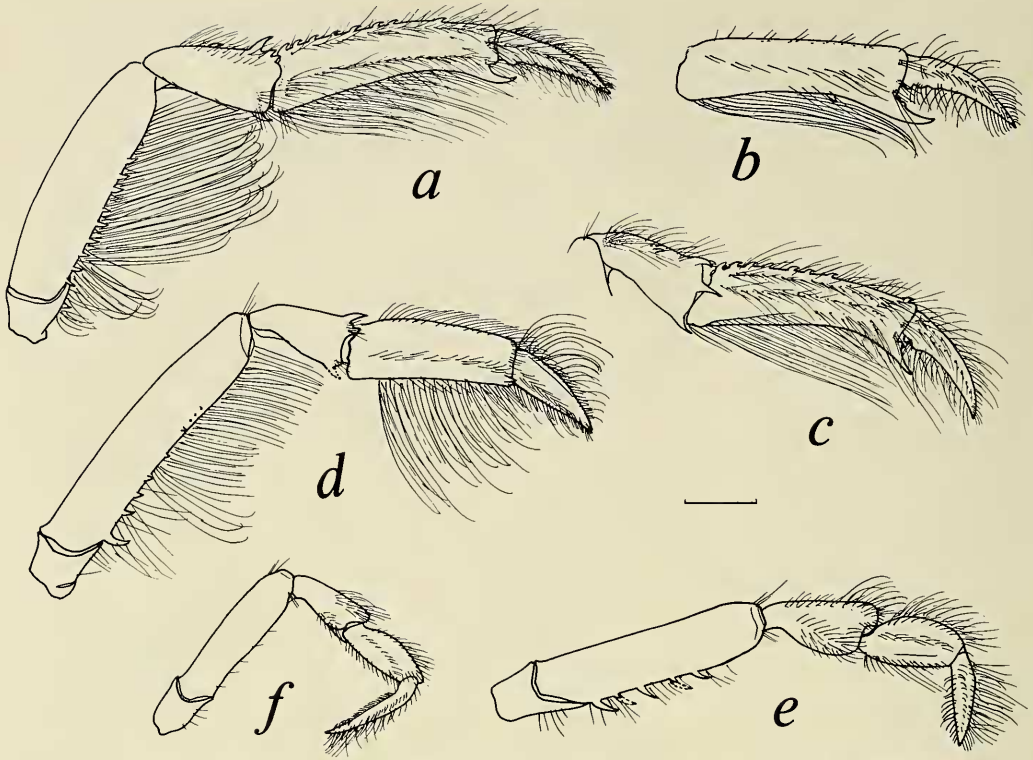


Fig. 3. *Upogebia spinistipula*, new species, ♀ Paratype: a, Right cheliped, lateral; b, Right chela rotated slightly to show ventral spine on palm; c, Left chela and carpus, mesial; d, Leg 2; e, Leg 3; f, Leg 4. Scale = 1 mm.

verse anterior ridge confluent with broader lateral ridge at each side, posterior margin with shallow concavity.

Eyestalk stout, eye as broad as distal diameter of stalk, directed anteriorly and laterally; stalk in lateral view concave dorsally, convex ventrally.

Antennular peduncle reaching slightly beyond terminal article of antennal peduncle, its proximal 2 articles together slightly shorter than terminal article; uneven row of spines on ventral margin of articles 1, 2 and proximal half of 3; flagella unequal, lower thinner ramus somewhat longer than thicker upper one.

Antennal peduncle with less than  $\frac{1}{3}$  its length (terminal article and distal part of penultimate article) extending beyond tip of rostrum, row of spines on ventrolateral margin of apparent articles 1 and proximal

part of 2, ventromesial spines on article 2 continued as ventral row on article 3, terminal article spineless; scale moderate, triangular, tapered to acute terminal spine; flagellum, if extended, reaching beyond branchiostegite.

Maxilliped 3 without epipod.

Epistomial projection subquadrate in lateral view, bearing 2 strong spines on antero-dorsal corner.

Chelipeds subequal. Coxa with slender anteriorly hooked spine on posteromesial margin. Ventral margin of ischium spineless. Merus lacking subdistal dorsal spine; row of 9–11 slender variably sized and arranged spines or tubercles on ventral margin. Carpus trigonal, shallow longitudinal groove laterally, lacking submarginal spine at anterior ventrolateral corner; mesiodorsal crest of 3 or more moderate to strong

spines behind prominent spine on anterior margin, 3 moderate spines on anterodorsal margin mesial to articulation with propodus; strong spine near middle of distomesial margin, and occasionally 1 or 2 smaller spines on margin above it,  $\delta$  sometimes with tubercles on proximomesial surface near anteromesial spines. Palm suboval in cross section, length including fixed finger about 2.4 times height near midlength in  $\delta$ , 5.5 times height in  $\text{♀}$ ; bearing longitudinal rows of mixed plumose and long setae on all surfaces, longest ventrally; palm of  $\delta$  with obsolescent dorsal ridge, paralleling this a mesiodorsal row of forwardly bent or hooked spines, and on proximomesial margin beneath overhanging prominent anterodorsal spine of carpus a slightly sigmoid row of spiniform tubercles; distomarginal spine below mesial dactylar condyle, 1–3 smaller spines ventral to this on distal margin of palm; lower mesial surface usually spineless, but often in  $\delta$  and occasionally in  $\text{♀}$  a spine on ventral margin of palm about  $\frac{2}{3}$  distance from proximal margin; low ridge running obliquely antieriad from heel of palm to become obsolescent at midlength. Fixed finger short, slender, downcurved from palm and tapering anteriorly to slender tip, 2–5 obsolescent teeth on proximal prehensile edge. Dactyl stouter than fixed finger and far overreaching it, setose, toothless, tip corneous.

Legs 2–5 elongate and slender. Leg 2 reaching about to distal  $\frac{1}{4}$  of cheliped palm; carpus with slender, acute distodorsal spine and similar but smaller subdistal ventral spine; merus without subdistal dorsal spine, proximal mesioventral spine succeeded distally by 5–7 ventral spines diminishing in size along row; coxa with strong proximomesial spine. Leg 3 with merus bearing ventral row of 5–9 spines; ischium unarmed; coxa of  $\text{♀}$  with flange-like low spine lateral to gonopore. Leg 4 with merus and ischium unarmed, dactyl longer than propodus. Subchelate leg 5 reaching beyond ischium of cheliped.

Uropod with ovate exopod far overreaching subtriangular endopod, tiny acute spine on protopod above base of endopod.

*Measurements in mm.*—Holotype  $\delta$ : length anterior carapace 6.8, length carapace 10.9, length chela including fixed finger 7.7, height palm near midlength 2.8; allotype  $\text{♀}$ , same measurements: 4.0, 6.8, 2.8, 0.77.

*Known range.*—Confined to the material examined (see Fig. 1).

*Etymology.*—From the Latin “spina,” spine, and “stipula,” stalk, for the spined antennular and antennal peduncles. It is a noun in apposition.

*Remarks.*—*Upogebia spinistipula*, new species, has an unmodified tail fan with essentially rectangular telson, being morphologically similar in this respect to the majority of upogebiid species in the western hemisphere. In other respects, however, the species differs from western Atlantic congeners. The ventrally spiny antennular and antennal peduncles, for which the species is named, are shared by no other known representatives in the region, but these articles are so spined in some species of the newly erected *Gebiacantha* Ngoc-Ho, 1989, which contains several representatives from the Indo-West Pacific region. *Gebiacantha acutispina* (de Saint Laurent & Ngoc-Ho, 1979) and *G. reunionensis* Ngoc-Ho, 1989 are perhaps closest to *U. spinistipula* with respect to these structures. *U. spinistipula* has one postorbital spine, but species of *Gebiacantha* have two or more postorbital spines. The relatively smooth but sexually dimorphic chelipeds of *U. spinistipula* are devoid of strong ventral spines characteristic of *Gebiacantha* species.

The long slender rostrum of *U. spinistipula* bears some resemblance to that of *U. leptota* Williams, 1986, from the eastern Pacific. The dorsal surface of the rostrum of the former bears small spines in addition to those along the rostral margin, whereas in *U. leptota* the dorsal surface, except for the margin, is spineless. *U. spinistipula* there-

fore seems to stand apart in a number of respects from other species in the family.

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#### Literature Cited

- De Saint Laurent, M., & N. Ngoc-Ho. 1979. Description de deux espèces nouvelles du genre *Upogebia* Leach, 1814 (Decapoda, Upogebiidae).—*Crustaceana* 37(1):57–70.
- Leach, W. E. [1814]. Crustaceology. In *Edinburgh encyclopaedia* 76:383–437, pl. 221, Edinburgh [Scotland].
- Ngoc-Ho, N. 1989. Sur le genre *Gebiacantha* gen. nov., avec la description de cinq espèces nouvelles (Crustacea, Thalassinidea, Upogebiidae).—*Bulletin du Muséum National d'Histoire Naturelle, Serie 4, Section A* 11(1):117–145.
- Phillips, N. W., D. A. Gettleton, & K. D. Spring. 1990. Benthic biological studies of the southwest Florida shelf.—*American Zoologist* 30(1):65–75.
- Rezak, R., S. R. Gittings, & T. J. Bright. 1990. Biotic assemblages and ecological controls on reefs and banks of the northwest Gulf of Mexico.—*American Zoologist* 30(1):23–35.
- Williams, A. B. 1986. Mud shrimps, *Upogebia*, from the eastern Pacific (Thalassinidea: Upogebiidae).—*San Diego Society of Natural History, Memoir* 14:1–60.

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